**IN THE CLAIMS**

Please cancel claim 14 without prejudice or disclaimer as to the subject matter thereof.

1. (Currently amended) A system for collecting hemodynamic data from a patient and utilizing said data to optimize a cardiac pacing regimen for said patient, comprising:

a means for collecting hemodynamic data of a patient ~~during periods of rest and periods wherein~~ when said patient is performing the activities of daily living and for storing said collected hemodynamic data, wherein said hemodynamic data consists of a lowest estimated pulmonary artery diastolic pressure (ePAD) value;

a means for monitoring and/or stimulating cardiac tissue of a patient to one of provide a desired cardiac rhythm and restore the desired cardiac rhythm; and

a means for utilizing the collected lowest ePAD value with the means for monitoring and/or stimulating cardiac tissue to optimize an atrio-ventricular (AV) pacing interval for said patient.

2. (Previously presented) A system according to claim 1, wherein the means for collecting the lowest ePAD value comprises one of the following transducers, each of which provides an output signal directly or indirectly indicative of at least one hemodynamic metric of the patient:

an absolute pressure sensor adapted to be fluidly coupled to a cardiac chamber of the patient, an absolute pressure sensor adapted to be fluidly coupled to a pulmonary artery of a patient, an absolute or a differential pressure sensor adapted to be fluidly coupled to a portion of the vasculature of a patient.

3. (Original) A system according to claims 1, wherein the means for monitoring and/or stimulating comprises a one of the following:

a pulse generator, a implantable pacemaker, an implantable cardioverter defibrillator, a muscle stimulation apparatus, an external pacemaker.

4. (Previously presented) A system according to claim 3, wherein the means for collecting the lowest ePAD value comprises one of the following:

an absolute pressure sensor adapted to be fluidly coupled to a cardiac chamber of the patient, an absolute pressure sensor adapted to be fluidly coupled to a pulmonary artery of a patient, a differential pressure sensor adapted to be fluidly coupled to a portion of the vasculature of a patient, an implantable absolute pressure sensor coupled to an external reference pressure signal; and

wherein an activity-level measurement means is optionally coupled to said patient and an output signal of said activity-level measurement means is time-synchronized to the means for collecting hemodynamic data and said activity-level measurement means is derived from an accelerometer transducer or a piezoelectric crystal transducer.

5. (Currently amended) A method of optimizing the hemodynamics of a patient having an implantable cardiac rhythm stimulation and monitoring device, comprising the steps of:

collecting hemodynamic data from said patient, during a period of time when a heart rate of the patient is elevated above a resting rate due to activity by said patient, with a hemodynamic monitor adapted to be disposed in fluid contact with a volume of venous blood of said patient, wherein the hemodynamic data consists of the lowest estimated pulmonary artery diastolic pressure (ePAD) value;

storing said lowest ePAD value in a computer readable memory medium;

collecting cardiac event data from the patient;

storing the cardiac event data in a computer readable memory medium;

analyzing said lowest ePAD value in conjunction with said cardiac event data to determine an atrio-ventricular (AV) delay interval ~~that~~to optimizes the hemodynamics of said patient; and

providing said AV delay interval to an implantable cardiac rhythm stimulation ~~and/or monitoring~~ device as an operating AV delay interval for ~~chronic~~ delivery of cardiac pacing therapy.

6. (Canceled)

7. (Currently amended) A method according to claim 5, wherein the lowest ePAD value is one of:

collected substantially continuously, ~~periodically, at a pre-determined time of day, at a pre-determined interval, while the patient is at rest,~~

while the patient is performing typical daily activities for said patient,

while the patient is strenuously exercising, ~~and/or~~

while the patient is exercising mildly.

8. (Previously presented) A method according to claim 5 or claim 7, wherein during the providing step at least one of the following parameters comprises a part of the cardiac stimulation sequence: a sensed-AV interval, a paced-AV interval.

9. (Original) A method according to claim 5 or claim 8, wherein the implantable cardiac rhythm stimulation and/or monitoring device comprises a bi-ventricular device.

10. (Original) A method according to claim 9, wherein said implantable cardiac rhythm stimulation and/or monitoring device is programmed to at least one of the following pacing mode(s): a dual chamber pacing mode, a ventricular pacing regime; a dual chamber sensing regime; a trigger, null and/or inhibit delay response regime (in response to a sensed cardiac event); or a rate-responsive variant thereof.

11. (Original) A method according to claim 5, claim 7 or claim 9, wherein the hemodynamic data is collected using at least one of the following data collection models:

for a set of different A-V intervals during pacing at a common heart rate,

for a first set of different heart rates using a common A-V interval, or

for a second set of different heart rates constrained in a predetermined range for a preselected period of time.

12. (Previously presented) A method according to claim 11, wherein, as applicable:

the set of different A-V delay intervals comprises a range of between of about 80 ms and about 350 ms;

the first set of different heart rates is between about 40 bpm and about 180 bpm;

the second set of different heart rates is between about 40 bpm and 180 bpm; and

the preselected period of time is between a few minutes and several days.

13. (Canceled)

14. (Canceled)